

Viscoelastic evacuation of traumatic hyphaema

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SUMMARY A technique for the safe evacuation of traumatic hyphaema is described. The viscoelastic properties of Healonid are used to separate the hyphaema from other ocular tissues and to extrude it through a small corneal incision. Healonid maintains a deep anterior chamber and a stable intraocular pressure. It also protects the lens, cornea, and iris and allows clear observation.

Surgical evacuation of a hyphaema becomes necessary when it is the cause of a prolonged rise in intraocular pressure, when there is a danger of blood staining of the cornea, and when a clot is likely to undergo fibrosis.

Removal of a hyphaema is often a difficult and risky procedure. It may not be possible to remove a clot unless a very large incision is made. It may not be possible to separate the clot from the iris or chamber angle. Sudden reduction of the intraocular pressure may cause further bleeding and a cycle of bleeding, glaucoma, evacuation, and further bleeding. Poor observation and a collapsed anterior chamber make manipulation within the eye dangerous and promote injury to the cornea, iris, and lens. A large incision may cause prolapse of iris, ciliary body, or lens.

The technique to be described makes use of the viscoelastic properties of Healonid (sodium hyaluronate)—its abilities to separate tissues and maintain space—and is considered to be an improvement on that of Miller and Stegmann.¹ It requires only small incisions, separates and removes clots completely, maintains the intraocular pressure, reduces the likelihood of further bleeding, maintains a deep anterior chamber, and allows clear observation, thus offering protection to the iris and lens and safe surgical manipulation within the eye.

Material and method

1. A 1 mm stab incision is made with a keratome shaped diamond knife on the corneal side of the limbus. This opening is used for the injection of

Healonid. The opening is better made on the side to suit the surgeon's master hand.

2. A similar sized incision is made on the opposite side of the cornea if the hyphaema is fluid. When the hyphaema is clotted, this incision is enlarged to 3 mm (Fig. 1).

3. Healonid is injected through a fine cannula. Begin close to the internal opening of the incision. The hyphaema is pushed towards the other side. Angle the cannula up and down to clear all of the hyphaema from the region around the stab opening. If the injection is made slowly, there is no mixing between the Healonid and blood (Fig. 2).

4. The intraocular pressure will begin to rise as Healonid is injected. The injection is therefore accompanied by opening of the incision on the opposite side—gentle pressure with an iris spatula on the limbal side of the incision. Blood will begin to extrude, and the pressure will remain constant.

5. The Healonid cannula is gradually advanced across the anterior chamber. Clots are separated from the iris or angle by directing flow toward the appropriate position (Fig. 3).

6. Perfect visibility through the Healonid allows clear observation of the iris and lens and of the depth

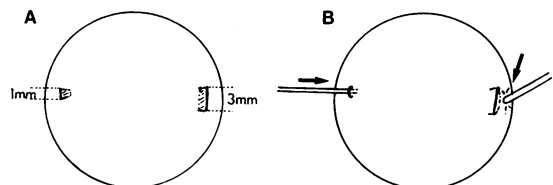


Fig. 1 A: 1 and 3 mm incisions are first made on opposite sides of the cornea. B: Healonid is injected through the 1 mm incision. The hyphaema is evacuated and the ocular pressure regulated by depressing the limbal edge of the 3 mm incision.

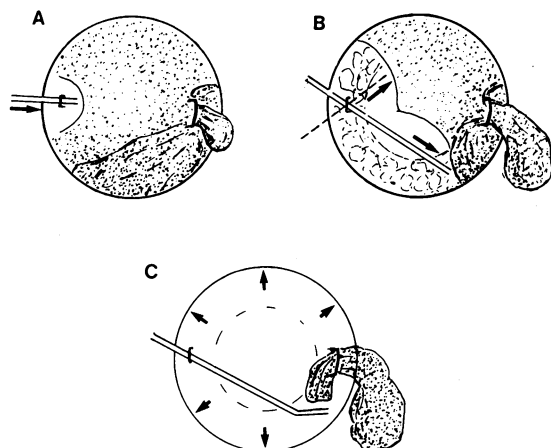


Fig. 2 A: Healonid is injected slowly into the anterior chamber. B: The cannula is advanced and angled appropriately. C: Healonid remains in the anterior chamber after evacuation of the clot, thus maintaining the ocular pressure.

of the anterior chamber. The cannula can therefore be manipulated inside the eye with safety (Fig. 3).

7. The Healonid is left in the anterior chamber once the hyphaema has been removed. The cornea is sutured if necessary.

8. Postoperative control of the intraocular pressure is achieved by the use of oral acetazolamide or topical timolol drops.

Discussion

This technique has been used successfully on a small number of patients. It offers advantages over other methods. The necessary incisions into the cornea are small and may not require sutures, in contrast to the large 180° incision often advocated. The hyphaema, clotted or fluid, is readily separated from other intraocular structures and extrudes through the small

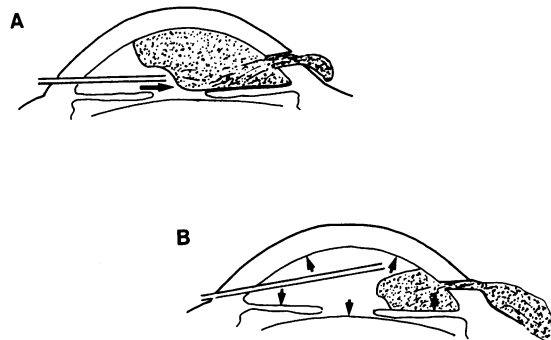


Fig. 3 A: The cannula and Healonid injection are directed so as to separate the hyphaema from the iris and lens. B: The Healonid maintains a deep anterior chamber, giving protection to the lens, iris, and cornea.

exit wound. It is difficult to separate a clot from the iris or angle with any other instrument without causing direct tissue damage. The intraocular pressure can be kept stable by controlling the rate of Healonid injection and blood/aqueous extrusion. The sudden fall of the intraocular pressure to zero which must occur after any large incision, and which is probably a major factor in causing a second haemorrhage, is thus avoided. The anterior chamber is maintained throughout by injecting Healonid into an intermittently closed system. The Healonid-filled part of the chamber allows perfect observation while protecting the cornea, iris, and lens.

All manipulations within the eye are therefore made under direct observation in a deep and stable chamber. The danger of instrumental injury to the lens in particular, and the iris and cornea is thus greatly reduced.

Reference

- 1 Miller D, Stegmann R. *Healon. A guide to its use in ophthalmic surgery*. New York: Wiley, 1983: 189-90.

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